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ABSTRACT

The report documents a project to adapt and design instructional media and materials of a regular senior high social studies curriculum for use with mainstreamed mildly handicapped students. Supplementary materials were developed and tested at five sites to accompany the world history textbook, "Our Common Heritage." Products included the following: a series of audiocassette tape lessons with accompanying print activity sheets; a print teacher's guide to accompany the text; an electronic gradebook to assist teachers in tracking student progress in meeting textbook objectives; a world history database for teaching concepts, facts, hypothesis testing and other thinking skills; and a guidebook for textbook adaptation. The initial assessment process included a publisher's needs assessment, an author's needs assessment, and instructional needs assessment which indicated needs in such areas as thinking skills, written language skills, interpretation map and globe skills, and time and chronological skills. Among evaluation results derived from teachers were enthusiasm over the audiocassettes, approval of the print materials, interest in the computerized programs but concern about the availability of resources and training. A final section reports on marketing efforts, primarily with the publisher of the textbook. Appendix A is an extensive (16 pages) "Guide to Textbook Adaptation." (DB)

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ED285306

Adaptation of Instructional Materials For Use With Mainstreamed Students

FINAL REPORT

FOR

CONTRACT #300-83-0264

Submitted to:

U.S. Department of Education
Special Education Programs

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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Macro Systems, Inc.

July, 1985

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I. INTRODUCTION

I. INTRODUCTION

The U.S. Department of Education, Office of Special Education Programs, on June 27, 1983, issued RFP 83-031 entitled "Adaptation of Instructional Materials for Use with Mainstreamed Students", to which Macro Systems, Inc., responded. The Department saw a need for the development of supplemental instructional materials to accompany a textbook that was used extensively in regular classrooms in order to make them more suitable for mildly handicapped mainstreamed students. The procurement was "designed to provide regular classroom teachers with the type of educational media and materials they need to effectively instruct handicapped students integrated into their classrooms" (RFP 83-031, page 1).

The impetus behind this solicitation was that, currently regular classroom teachers have to modify a large portion of the materials that they use. Many encounter difficulties in their attempts to develop materials that meet both the learning needs of the mildly handicapped students integrated into their classrooms and their own needs. Few textbook adaptions exist that are designed for use with students who have a wide range of abilities and learning styles.

The Department of Education judged this procurement to be necessary because of the reluctance on the part of publishers to invest in the development of curriculum for handicapped students. Not many publishers consider special education to be a lucrative market. This federal investment was designed to stimulate the private sector to develop supplemental materials appropriate for use by mildly handicapped learners who use an existing textbook. It was also part of an overall effort "to promote modification of existing instructional texts when that is the most cost-effective and timely strategy for improving availability of instructional media and material for the handicapped" (RFP 83-031).

On August 10, 1983, Macro submitted its proposal and in September was selected as one of three organizations awarded a contract to design supplemental media and

materials for use with mainstreamed students. Macro, at the time of solicitation, was working on a contract to modify an American history text to meet the needs of mildly handicapped middle school students mainstreamed into regular classrooms. The expertise gained by Macro in the performance of this contract was advantageous in meeting the challenge to modify and adapt a senior high social studies text. Our experience in working with regular classroom teachers who have mainstreamed students in their classes and an established relationship with the publisher, Ginn and Company, were also critical to the acquisition and success of the project. Ginn and Company is a publisher of widely used textbooks that are well-respected by the education community. Ginn and Company granted permission for Macro to adapt their senior high school text, Our Common Heritage, for use with mildly handicapped students, and the agreement included all necessary copyright releases.

Macro Systems identified several factors critical to the success of this project:

- Selection of a world history text presently in frequent use and expected to have high levels of usage in the future with mildly handicapped senior high students mainstreamed into the regular education classroom
- Selection of five sites currently using the curriculum that represent a national cross section of American education at the senior high school level
- Cooperation of a publishing company (Ginn) with which Macro has an established relationship to ensure a usable and a marketable product.
- Active involvement and motivation of school systems and teachers participating in the needs assessment and formative evaluation
- Design of a formative evaluation plan that provides an efficient mechanism of feedback to material developers
- A fluid network of information flow to and from the Project Director and the classroom teachers in the five sites

In Macro's response to the RFP, we indicated plans to develop a set of instructional materials as a supplement to Our Common Heritage for use by senior high teachers and the mildly handicapped students placed in their classrooms. The accommodation of the mildly handicapped learner in the regular classroom is a sound educational practice if the general curriculum can be adapted to incorporate both the instructional needs of the teachers and the learning needs of these students without detriment to the needs of the

regular classroom students. Learning principles and methods that apply to the needs of these special students and their teachers can be applied as an enrichment to the total classroom learning environment, benefiting not only the mildly handicapped students for whom they are designed but the nonhandicapped students who share some of their educational needs, characteristics, and opportunities.

Materials for the teacher and for the mildly handicapped students themselves would be designed to integrate the assessed needs of all those involved in this educational effort, from the classroom teacher and student, to the school administrators at local and State levels, to the publisher whose text provides the basis for adaptation.

A Commitment To Needs

Macro's approach to producing these adapted materials was guided by a strong commitment to needs assessment. We felt that it would be important to identify the learning needs that are common to the mildly mentally retarded, learning disabled, and emotionally disturbed students who constitute the targeted population of mildly handicapped students. A focus on the needs most common to the three groups increases the wider use of the materials by regular students and the generalizability of the methods to other subject matter.

We also planned to incorporate the instructional needs of the classroom teachers who teach this target population. Instructional needs are broadly defined to include the teachers' knowledge of this student population, skills in classroom management, and teaching methods and materials specific to those special students.

In addition, Macro planned to determine the production and marketing needs of the publisher and author. In order for this project to stimulate parallel efforts on the part of other publishers and authors, the product as an economic and educational commodity must be viable and capable of providing economic returns to publishers and educational returns to buyers. This suggests the need to meet both publisher specifications in terms of production and marketing and author specifications in terms of curriculum content and objectives.

Textbook To Be Adapted

The textbook chosen for adaptation was Our Common Heritage: A World History which was published in 1981 by Ginn and Company. Its author, Dr. Daniel Roselle, was Professor of History at the State University of New York College at Fredonia and was Editor of Social Education, the journal of the National Council for the Social Studies. This social studies text of world history, which is used in ninth through twelfth grades, begins with the development of civilizations in four great river valleys and concludes with a study of our contemporary world, its changes, and its future. The book examines the simultaneous development and diffusion of both Western and non-Western culture, helping students understand how the world's cultures have become increasingly interdependent.

Many features of Our Common Heritage offer the potential for developing educationally sound supplemental materials for mildly handicapped high school students and their teachers, including:

- Personal vignettes or anecdotes of a person or an event
- Photographs and illustrations on particular time periods
- Student study aids such as timelines and short overviews
- Student activity sheets coded for use with average and above average students and according to specific skill areas
- Learning objectives, teaching strategies, and key concepts

Furthermore, high national sales volume suggests broad future use by school systems.

Adaptation Products

The American College Dictionary defines adaptations as "a. alteration in the structure of function of organisms which fits them to survive and multiply in a changed environment. b. A form or structure modified to fit a changed environment." These definitions support this project's approach to curriculum adaption, which stresses the interaction of the organisms—teacher and student—with the form and structure; in this case, the materials and school setting.

Successful adaption is a process that is "learner centered." It requires changes not only in the format, content, and method of presentation of the material but also in the methods and style of instruction used by the teacher in response to the needs and behaviors of the students. This process results in the development of materials—for both the teacher and the students—that ultimately help students learn more successfully alongside their nonhandicapped peers.

Macro's experience with an earlier adaption contract provided us with some insights into needed adaptation products. The product formats we decided to focus on were:

- Teacher's guide supplementary materials that help teachers understand the learning characteristics and needs of mildly handicapped students, including approaches to classroom management and organization to accommodate special learning needs, specify generalized strategies for adapting curriculum in subject areas, and suggestions for creative supplemental activities for use with students.

- Student activity and study skill sheets that strengthen curriculum elements through use of creative repetition, focus on vocabulary development and improving reading comprehension, and cultivate learning of skills such as graph, chart, and map reading.

- Audiocassettes that simplify concepts and language, provide summaries and motivation and increase listening skills. Sound effects, period music, and dramatic techniques can enhance the script and capture students' interest.

- Computer software that help students learn facts, understand relationships, and develop concepts while acquiring skills in using the computer. Macro acquired the services of Intentional Educations as a subcontractor to work with us in the development of microcomputer software as an adaptive product for this proposed project. Intentional Educations is the developer of the Bank Street Writer, an extremely powerful, easy-to-use word processing software program for children. We made plans to explore an innovative approach based on the use of an extremely simple database manager tool that will be integrated with pedagogical software and databases adapted from the textbook.

- A computerized instructional management system that helps teachers track student progress in meeting the objectives of the text. The preparation of enabling objectives for each of the textbook objectives and a computer technique for charting the progress of each child in the classroom as they meet the enabling objectives can be an effective technique for monitoring the status of mainstream students.

Key considerations in the adaptation process included analysis of the text in areas such as:

- Material content
  - Vocabulary and reading comprehension
  - Concept development and generalization
  - Reasoning and decisionmaking
  - Specific skill development
- Methods of presentation/organization
  - Sequence of material
  - Amount of material presented
  - Method of presentation
  - Type of directions given
  - Amount of repetition and review
  - Type of evaluation and testing
- Format
  - Design, layout, and print of overall text and individual pages
  - Organization of teaching units
  - Large/small group student usage
  - Independent student usage
  - Effective use of graphic display

Site Selection

The characteristics of the schools, teachers, and students selected for product development and evaluation were an integral part of the adapted materials. It was, therefore important that the sites selected reflect characteristics and needs that are representative of the broader population of school systems, teachers, and mildly handicapped students across the country.

In locating potential sites for the project, Macro used the following general criteria:

- Geographic dispersion across the continental United States to account for regional differences in cultural and economic conditions
- Representation of urban, suburban, and rural settings

- Representation of White, Hispanic, and Black ethnic groups in the targeted student population
- Diversity of school systems in terms of size and organizational structure

In addition, the following specific conditions had to be met:

- Current use of the chosen text
- A policy of integrating mildly handicapped students into the regular social studies classrooms
- A recognized need on the part of school administrators, and subject matter teachers to serve this student population in a least restrictive environment
- A commitment on the part of school administrators, subject matter teachers, and resource and support staff to the purpose of this project and the development effort it entails

Macro selected schools where the composition of the student body included mild mentally retarded, mild learning disabled, and mild emotionally disturbed students.

A needs assessment, formative evaluation, and marketing plan were also major features of Macros' approach to the tasks of this contract. They are discussed in full detail in the following chapters of this report.

II. THE ASSESSMENT PROCESS

II. THE ASSESSMENT PROCESS

A major component of this project has been careful attention to the multitude of needs of the consumers of special education materials as well as the publisher and author. The identification of needs is the vital first step in the formative evaluation process. (See Chapter IV) An important premise on which rest the credibility and utility of a needs assessment is whether needs assessment is perceived as an integral part of the project planning and implementation cycle.

Many projects are designed to accomplish stated objectives without systematic consideration given to the unique needs of the parties for whom the services and products are being developed. From the beginning, Macro's approach to this project has had as a key element direct input of the educational consumers and producers into the design of the curriculum materials. Thus, the needs of consumers—the school systems, teachers and students, and the needs of the producers—Ginn and Company, and the author of the text—are assessed at the very beginning of the process, and form the bases of the material development.

In this section, each of the needs assessments is described in terms of its purpose, basic framework, and conduct.

Publisher's Needs Assessment

The purpose of the Publisher's Needs Assessment was to determine the conditions necessary for Ginn & Company to assume marketing and production of the curriculum materials as a supplement to Our Common Heritage. The balancing of consumer needs within the production and marketing specifications of Ginn & Company, provided a long range focus for the materials development process.

Publishers Needs Assessment Interview Guide was developed to collect this information. The areas of need addressed were:

- Parameters for product packaging
- Parameters for materials contents
- Cost parameters
- Marketing considerations and strategies

Ginn and Company indicated that their needs included:

- A format that is easy to produce and easy to market
- Materials that are valid in terms of curriculum-area content, social studies skill development, and general skill development
- Materials that are useful in terms of length, complexity, ease of use, diverseness, and appropriateness
- Materials that are informative

Author's Needs Assessment

The purpose of the Author's Needs Assessment was to develop guidelines and recommendations for adaptations of Our Common Heritage to the needs of its mildly handicapped users. The insights and needs of the author were considered essential to the adaptation of the text, the extension of its subject matter to a new target population, and the preservation of its content and objectives.

An Author's Needs Assessment Interview Guide was developed to collect this information. The areas of need addressed were:

- Recommended guidelines for adapting text and teacher's guide
- Priority areas of text for adaptation, in terms of its organization
- Areas particularly amenable to adaptations, in terms of content, materials characteristics, and learner considerations
- Parameters of supplemental curriculum package

Daniel Roselle, author of Our Common Heritage, responded with the following suggestions for the adaptation:

- Use the approach of expanding on the "meet the people" segment of each chapter
- Use caution that you don't violate the historical integrity
- Give teachers lots of ideas for additional activities
- Don't oversimplify

INSTRUCTIONAL NEEDS ASSESSMENT

The framework for the Instructional Needs Assessment Instrument was based on a review of the literature in two areas: (1) the learning characteristics of mildly handicapped students, and (2) the instructional material needs of their teachers. The instrument is divided into two sections.

(1) Instrument #1: Student Needs Profile

The student needs profile section:

- Collects information about mildly handicapped students as benefactors of adaptation efforts
- Compares ideal or desired learning results to actual or current learning results
- Reduces and orders needs in terms of importance and practicality

The instrument contains skills listings that represent ends or the resulting abilities that mildly handicapped students could actually achieve. These goals are a compilation and synthesis of skills drawn from research and the professional literature. In addition to determining which of the various social studies skill areas are of the greatest importance, teachers are asked to identify areas in which supplemental aids have the greatest impact.

The skills are divided into seven broad categories: personal/social, written language, oral language, interpreting maps and globes, understanding time and chronology, interpreting pictures and graphic material, and thinking. Subsumed under each general category is a set of associated skills. Teachers identified the

percent of mildly handicapped students with extreme, some, and slight difficulty with a particularly skill and, simultaneously, the percent of students who would greatly, somewhat, or slightly benefit from supplemental materials.

(2) Instrument #2: Solutions Profile For The Development Of Supplementary Materials

The solutions profile contains three parts: (1) supplementary material for student use, (2) supplementary material for teacher use, and (3) teacher background information. The purposes of this instrument are to:

- Further identify specific, high potential supplementary materials or products for students and for teachers that could successfully address learning needs
- Summarize the educational setting in which supplemental materials could be used
- Determine how to fill the gaps between identified ideal and actual learning results

The first two sections of the instrument contain lists of supplementary materials that could be adapted for either student and/or teacher use. Teachers identified the percent of students who would benefit greatly, somewhat, or slightly from a particular instructional material or teacher aid.

The third section of the instrument focuses on teacher background information. This section allows for further verification and interpretation of needs information. Teachers identified the number of mildly handicapped students in their social studies classes, their prior use and experience with various methods of meeting the needs of the mildly handicapped, and an assessment of the use of microcomputers in the classrooms.

2. THE FIELD TEST SITES

The participation of school systems was an integral part of the project. Sites represented a cross-section of the nation's school systems, teachers, and student population. Selected school systems had to meet certain criteria, such as current use of

the textbook Our Common Heritage and the policy of integration of mildly handicapped students into regular social studies classrooms.

The five sites participating in the study included:

- Andover, Massachusetts
- Wakefield, Massachusetts
- Kenmore, New York
- Boulder, Colorado
- Toledo, Ohio

Andover, Massachusetts is a small town with a population of 26,000 located 19 miles north of Boston. The nine public schools serve 6,161 students. Within the past 10 years, the population of the town and schools has expanded rapidly. They new population is being attracted to Andover in large part because of the quality of the public school system. The residents, both old and new, expect a high-level, college-oriented curriculum. The goal of the Andover school system is to educate each student to his or her full potential, providing a firm foundation in the basic education skills. To achieve this goal, the system offers program options based on the various learning styles of students. Special programs and tutoring are available throughout the system for students with learning difficulties. Enrichment courses are offered for students with superior academic talents. The Social Studies Coordinator at Andover High School is the site team leader. A learning disabilities specialist and three social studies teachers make up the team. There is 1 mildly retarded, 1 emotionally disturbed, and approximately 37 mildly learning disabled students mainstreamed into the regular social studies classes.

Wakefield, Massachusetts is a small "bedroom" suburb of 26,000 residents approximately 10 miles north of Boston. It is a middle-income community with a blend of professional and blue-collar residents. Wakefield High School, the site school for the needs assessment, enrolls 1,300 students. Approximately 70 percent of the students attend postsecondary educational institutions. This comprehensive high school has an outstanding advanced placement program in major academic areas, as well as innovative vocational programs in such areas as culinary arts and banking. The Social Studies Department Chairman at Wakefield High heads the site team. Two social studies

teachers, a support person for learning disabled students, and a reading specialist constitute the team. There are 3 emotionally disturbed, 1 mildly mentally retarded, and 40 learning disabled students in the regular classrooms.

Kenmore, a town in upstate New York, is north of Buffalo on the Niagara River, bordering Canada. The town has extensive recreational, cultural, and educational facilities. Kenmore has 12 public schools serving 11,000 students. Seventy percent of the graduates continue formal education, and 20 percent receive scholarships. The school system provides a comprehensive program sensitive to individual differences, including special programs for the physically and mentally handicapped. The site team is composed of the site team leader who is the supervisor for social studies and foreign language instruction, a resource room teacher, a chairman of the social studies department, a specialized English teacher, and a social studies teacher. There are approximately 30 mildly learning disabled and 10 mildly emotionally disturbed students mainstreamed into the regular classrooms.

Boulder, Colorado is a community of 80,000, 25 miles northwest of Denver. It has a scientific and research center and is the site of the University of Colorado. Boulder High School, the site school for the needs assessment study, has 1,900 students, 65 percent of whom enter college. The school emphasizes three major curriculum areas: college preparatory, general education, and vocational technical education. The site team is headed by a social studies supervisor. The team teachers include a special education teacher, a reading resource teacher, a social studies teacher, and a teacher/counselor. There are about 50 mildly learning disabled, 5 mildly mentally retarded, and 35 emotionally disabled children in regular classes.

Toledo, Ohio is the major trading center for Northwestern Ohio and Southeastern Michigan. Toledo has 65 public and 50 parochial schools which serve 43,327 students. Excellent suburban and county schools, along with private schools, enhance a glowing educational picture. The high school educational program is organized into three basic areas of study: College Intensive, General Studies, and Vocational Studies. A core curriculum exists within all three areas to ensure a uniform quality education. Libbey High School, where the instructional needs instrument was conducted, is located in a residential community with modest bungalow and cottage-type housing. The school has 1,228 students, about 50 percent black, 40 percent white, and 10 percent Hispanic.

Special educational programs for the developmentally handicapped, the secondary developmentally handicapped, and the visually impaired exist throughout the school system. The site team is headed by the Social Studies Director of the Toledo Public Schools. Participating teachers include two social studies teachers and one special education resource teacher. There are approximately 10 mildly handicapped students mainstreamed into regular classrooms.

Five site team leaders were selected and then trained at an orientation meeting. Each leader selected four social studies, special education teachers or resource room teachers who composed the site team. These teachers completed the needs assessment instrument, and were subsequently interviewed by the site team leader for clarification of responses and any additional, relevant information.

NEEDS ASSESSMENT RESULTS

The overall results of the analysis of the needs assessment instrument that the 19 teachers completed revealed that a majority of the mildly handicapped students in the schools have extreme difficulty with many of the skills and that they would greatly benefit from all forms of supplemental materials and teacher aids.

The results from the teacher background information section revealed that a majority of teachers already vary their instruction to meet the special needs of mildly handicapped students through a variety of methods such as less lecturing or more concrete examples. Additional supplemental materials, adapted to the identified needs of teacher and student and combined with these instructional variations, would greatly benefit all involved parties.

Instrument #1 Findings

(1) Thinking Skills

Thinking is a skill category in which teachers identified a majority of mildly handicapped students with extreme difficulty in many of the specific thinking skills, especially synthesizing, classifying, and organizing information and analyzing problems. Teachers also believed that supplemental materials would be extremely

beneficial in helping students with these skills. The teachers identified 14 of the 16 individual skill areas as difficulty areas in which adaptations would be extremely beneficial.

(2) Written Language Skills

Written language skills were also found to have a majority of teachers identifying mildly handicapped students who have extreme need in various written language skills and who would greatly benefit from supplementary materials. Comprehending what is read is the most important and needed areas for adaptations.

(3) Oral Language Skills

Teachers found that skills in the oral language category were also difficult for mildly handicapped students. Summarizing, reasoning, interpreting, and using subtleties are skills where adapted materials would greatly benefit their students, according to the field site teachers.

(4) Interpreting Maps and Globes Skills

All of the specific skills in this category were identified as being somewhat difficult for mildly handicapped students. Teachers felt that their students had extreme difficulty with those skills and would greatly benefit from supplemental materials. Using all parts of the world atlas and inferring human activities or ways of life from physical details and latitudes were identified as the most difficult.

(5) Interpreting Pictures and Graphic Materials

Analyzing organization and structure of charts, identifying comparisons, and determining bases on which graphs are built are skills that mildly handicapped students found extremely difficult.

(6) Personal Social Skills

Working independently, focusing attention, and sustaining attention tend to be problems areas. However, for the majority of personal social skills, teachers did not feel that mildly handicapped students had extreme difficulty.

(7) Understanding Time and Chronology

Few of the teachers found skills in this category difficult for their mildly handicapped students. Formulating generalizations was the most difficult skill. Nine teachers fell into the 50-100 percent range.

Instrument #2 Findings

(8) Instructional Materials

All of the teachers felt that the 9 types of instructional materials would greatly benefit mildly handicapped students. Microcomputer software as a supplemental aid was identified as being extremely beneficial. Teachers identified study skill sheets, chapter outlines, and pre-reading questions as adaptations that would greatly benefit mildly handicapped students.

(9) Teacher Aids

Results of the needs assessment revealed that teachers felt that all teacher aids would be greatly beneficial for their mildly handicapped students. The aids that teachers found most helpful were discussion of learning characteristics, additional supplemental activities, and potential strategies for adapting materials.

Overall, responses to the needs assessment instrument suggest the following:

- Teachers identified a majority of mildly handicapped students who have extreme difficulty with many skills, especially thinking, written language, and oral language skills.

- Teachers felt that a majority of mildly handicapped students would greatly benefit from supplemental materials adapted to specific skills, especially in the thinking, written language, and oral language categories.

- Teachers felt that all forms of supplemental materials and teacher aids, especially the microcomputer, would be extremely beneficial.

- A majority of teachers had previously attempted to vary instructional delivery methods and instruction to meet the special needs of mildly handicapped students.

The result of this needs assessment revealed that the majority of mainstreamed, mildly handicapped students have difficulties with many of the skills needed to perform satisfactorily and understand the concepts presented in a secondary-level social studies classroom. The needs assessment identified the specific skill difficulty areas of the students, as well as the instructional needs of the classroom teachers. Appropriate supplemental materials, such as microcomputer software or student study skill sheets, could be developed and adapted to the skill areas on the basis of assessed need.

Mildly handicapped high school students will benefit from well-trained social studies teachers who have been given practical help in responding to the requirements of mainstreaming and can effectively integrate these students into their instructional program. Supplemental materials developed in conjunction with teacher input and assessed needs can be an integral component in this mainstreaming process.

The information from all respondents to needs assessment instrument was reviewed, reflected upon, and alternatives were considered. It was concluded that the focus should be on the following areas and types of adaptation:

Area	Type of Adaptation
Written Language Skills including:	
. Reading Comprehension	Chapter previews
. Differentiating Main Ideas	Student Activity Sheets
. Organizing Ideas	Microcomputer Software
Thinking Skills including:	
. Hypothesizing/Predicting	Student Activity Sheets
. Comparing/Contrasting	Microcomputer Software
. Synthesizing & Abstracting	Audiocassettes
. Classifying/Organizing Information	
. Analyzing Problems	
. Problem Solving	
. Associating Related Ideas	
Information For Teachers	Discussions of learning characteristics

III. THE PRODUCTS—DESIGN AND DEVELOPMENT

III. THE PRODUCTS—DESIGN AND DEVELOPMENT

This project vigorously pursued the development of a series of products designed to provide mildly handicapped mainstreamed senior high school students with materials that will improve their performance in world history classes. Four products resulted from these efforts and include

- A series of audiocassettes tape lessons, A Sound History of the World, with accompanying print activity sheets
- A print teacher's guide to accompany the textbook, Our Common Heritage
- An electronic gradebook to assist teachers in tracking student progress in meeting textbook objectives
- A world history database for teaching concepts, facts, hypothesis testing and other thinking skills

A guidebook for textbook adaptation to meet the needs of teachers with mainstreamed students

The development of these products took into consideration the goals and objectives of the curriculum adaptation and the product specifications resulting from the needs assessment conducted with publisher, author and teachers. Each of these products and their particular design and development issues will now be discussed.

A SOUND HISTORY OF THE WORLD

This instructional package, A Sound History of the World, was created especially to help students better understand the world's past—wars and rivalries and economic upheaval, religious differences and jealousies, allies and enemies—so that they can better understand the present and participate in preparing a better future. This series of 16 audiocassettes opens with a journey into prehistoric times and ancient civilizations and concludes with a look at contemporary times. The scripts focus on what students need to know about world history to become informed citizens with good decisionmaking skills.

The 16 tapes are graduated in complexity of content, concept load, and in sophistication of vocabulary. They range from 13 to 19 minutes in length, with the last two longest and most complex.

A narrator guides the listener through each of the tapes. Music appears at various points to capture the student's attention and imagination. Dramatization and sound effects are used to make events or ideas in history come alive. Sometimes a major historical character will speak up. Other times, a scene depicting an event such as the Boston Tea Party will entice the listener to enter the world of the colonists before the American Revolution. Sound effects help listeners use their full senses to interact with the material.

The scripts were developed from seven resource books which included textbooks, reference books, anthologies, and literature on the history of the world. The content of these scripts represents no single point of view or bias. It was necessary to make some choices where historians disagree, from minor issues to significant ones—i.e., whether laurel leaves or olive leaves were worn by Olympic winners, what the dates of the Harappan civilization were, and how the religion of Islam spread in the seventh century. A print copy of the script accompanies each of the 16 audiocassettes and can be used alongside the tape or alone.

The topics of each of the scripts were determined through a systematic and indepth literature review and analysis of major high school world history textbooks. A synopsis of each script was prepared and shared with a social studies expert consultant and with the site teams that conducted field testing of all the products. Revisions were made that incorporated their input and the scripts were prepared. The social studies expert consultant reviewed and commented upon each of the scripts before final production began.

Supplemental print materials were developed to help teachers extend the learning experiences of their students. These materials reinforce the vocabulary, people and events, and ideas and concepts in the audiocassettes. They are meant to support student learning not overwhelm it, and the number of items on a page have been determined with this educational principle in mind.

The student print materials have a black border around them. This technique is used to limit the visual field and help learners concentrate and focus on the printed page.

The Thinking Organizer prepares listeners for what they will encounter in each of the tapes. Concise sentences written at a simplified reading level describe the content of the tapes and ask students to think about important ideas or concepts.

The three student activity worksheets each focus on a different area. The Focus on Vocabulary and Historical Terms exercise presents youngsters with a word used in context in a sentence and then directs them to select its definition from a list. Focus on People, Places, and Events is a matching activity in which students match a person, place, or event with the correct description. Focus on Ideas and Concepts presents students either with categories for which they must supply information or questions for which they must write responses. The activity requires skills of locating examples or supporting details, comparing and contrasting, and summarizing.

Tape Topics

(1) Prehistoric Times and Ancient Civilizations

This tape covers the period from prehistoric beginnings through the ancient civilizations of Mesopotamia and Egypt. The intent is to give the student some appreciation for the slow, steady progress of humans from stone tools to laws inscribed on stone tablets. The characteristics of civilization are described.

(2) The Greek Contribution To Western Civilization

This tape focuses on Greek contributions to Western civilization, with an emphasis on achievements in the arts and sciences.

(3) The Rise And Fall Of The Romans

This tape describes Roman military and engineering might and the role of the Romans in spreading Greek culture. The influence of Greek culture on the Romans and the impact of the spread of Christianity are explored.

(4) Judaism And Christianity

This tape is about the growth of two of the world's major religions. It provides a brief account of the early history of the Jews, the impact of the man called Jesus, and the development of the Christian faith that followed his death.

(5) Early Civilization In Asia

This tape includes an account of the great Indian Empires and the achievements of China and Japan. The text attempts to convey to the student an understanding of the role that these great civilizations have played in the development of technology, science, and the arts. The interdependence of nations is stressed.

(6) Byzantine And Islamic Civilization

This tape focuses on the rise of the Byzantine civilization that rose from the combined elements of Greco-Roman civilization and Christianity and endured for a thousand years. It also describes the rise of a new religion, Islam, and how it expanded throughout Asia.

(7) African Heritage

This tape covers the development of early tribal societies of Africa and the powerful kingdoms that arose from them. The impact of the geography and natural resources on the changes in Africa is discussed. The goal of this tape is to develop the student's understanding and appreciation for the rich cultural diversity of this area.

(8) Early Civilization In America

This tape describes the varied cultures of North and South America. The text covers daily activities, religious practices, societies, and governments. The accomplishments in art and architecture are a special focus.

(9) Medieval Europe

This tape focuses on Feudalism and the Christian Church, especially on the role of the Crusades in expanding the knowledge and experience of Europeans. Life and times of the Middle Ages are explored. The student is led to an understanding of the roots of contemporary Europe.

(10) Renaissance And Reformation

This tape describes the phenomenon of the Renaissance, with its revival of interest in the achievements of the Greeks and Romans. It tells about art and literature and architecture, the role of the Church, the growth of scientific study and the development of universities. It also covers the conditions that led to the Reformation and the beginnings of Protestantism.

(11) Global Exploration

This tape explores the factors that led to European interest in exploring the world, including the new spirit of nationalism, and tells the story of the great discoveries that followed. Colonization and its consequences will be discussed. The bitter rivalries and tensions that grew in Europe and beyond are covered.

(12) Revolutionary Challenges

This tape focuses on some of the most important revolutions in world history, examines the influence of great thinkers and their writings, and discusses the changes in power. New forms of government in Britain, France, and America are described.

(13) Industrial Society

This tape examines the benefits and the problems brought about through industrialization. It tells about some important changes in standards of living and

working, the labor union movement, the birth of new economic ideas and the changing role of governments. New scientific knowledge and new responses in the arts are described.

(14) The Revival Of Empires

This tape gives some background on imperialism and discusses the reasons behind its revival in the nineteenth century. Imperialism in Asia, the Middle East, and Africa is recounted. The intent is to give students some understanding for the basis of world tensions and conflict to be revealed in the next tape.

(15) World Tension And Conflict

This tape describes the factors that led up to World War I and the Russian Revolution and how the seeds of World War II were planted in the legacy of those conflicts. The fall of the Czar, the Treaty of Versailles, the League of Nations, and the rise of dictators are all examined. World War II and its aftermath are discussed.

(16) Contemporary Times

This tape covers economic and political changes since the Atomic Age began. The emergence of new nations is described and their struggles, as well as those of China and Japan to evolve new ways of life are noted. International consequences of the conflicts between East and West and the critical problems facing us today are all discussed.

SUPPLEMENTARY TEACHER'S GUIDE FOR THE ABILITY-INTEGRATED CLASSROOM

These print materials were designed to assist teachers in developing strategies to use the text Our Common Heritage in a classroom that includes a wide range of abilities.

An introduction was developed that provides information on the learning characteristics and needs of mildly handicapped students and offers alternative strategies to managing the ability-integrated classroom and suggestions for creative supplemental activities.

For each chapter in the text, key vocabulary were identified. Primary and enabling objectives were written for each section within each chapter of the textbook. Teachers could use these objectives to develop activities and to evaluate student performance.

Chapter previews were prepared as "advance organizers" and summaries were developed as a review. They were written at a reading level below 8th grade to afford those students who struggle with the textbook a reading level supplement that is easier to handle. The previews help to create prereading anticipation and the summaries serve as a review aid. These resources can serve as an aid to students who find preparing for a quiz especially difficult because they focus on major points in each chapter. They can be used as a stimulus for class discussion or for directed silent reading assignments.

As these materials were being developed they were sent to field test site teachers for use and review. Comments were received on their content as well as their design. A continual design- development- test-revise cycle was maintained throughout the creation of this set of materials. Issues were explored such as how to focus the design and content of the materials so that mildly handicapped mainstreamed students can use them with their nonhandicapped peers.

COMPUTERIZED PERFORMANCE MEASUREMENT SYSTEM (CPMS)

Computerized instructional management systems can record, compute, and print reports of student performance, thus eliminating many tedious hand calculations and other time consuming recordkeeping tasks. This is especially valuable for the teacher with an ability-integrated classroom who wants to monitor student performance closely, have careful documentation of student status in meeting particular objectives, and provide colleagues and parents with detailed documentation.

CPMS is computer software that serves as an electronic gradebook for world history classes using the textbook Our Common Heritage. It is both for teachers who

have never used a computer before as well as for those who have some experience. It is for teachers who want to be in the forefront of the technological innovation movement taking place in our schools.

The Computerized Performance Measurement System is unique in its individualized approach. The system is integrated with Our Common Heritage textbook, and the textbook chapter organization serves as the basis for its organization. Teachers do not need to make any adaptations to use it with their students. They need only to add the names of their students and the system is ready to go! It simplifies recordkeeping tasks and is a useful guide to teaching the text and monitoring the progress of individual students as well as the entire class.

CPMS's easy-to-use method for monitoring and recording student's progress in their use of Our Common Heritage enables teachers to evaluate their performance by objectives for each section of each chapter of the text. CPMS has these features to help teachers perform their teaching tasks:

- Serves as an electronic gradebook, producing four types of reports, including student averages.
- Enables users to determine up to four performance measures and weights for each of the section objctives in Our Common Heritage. Scores can be entered for each student that range from 0 (zero) to 100.
- Allows teachers to add up to two of their own objectives for each chapter of the text.
- Enables teachers to assign chapters to reporting periods, allowing for computation of scores that correspond to their school system's grade and report periods.
- Includes an introduction/getting started option that is a step-by-step explanation of the program.
- Allows users to get help at any time by pressing a ? mark.
- Enables users to choose what they want to do by ordering from menus.
- Lists the important commands used to make selections at the bottom of each screen.

The Teacher's Guide to Our Common Heritage, Supplemental Materials for the Ability-Integrated Classroom contains a primary objective with enabling objectives for each section of each chapter of the textbook. As teachers introduce a new chapter to their class, they can guide them in their instructional approach to teaching. Student projects can be developed that will meet selected objectives of the chapter or section, or quizzes can be prepared that will measure progress in meeting several objectives.

When teachers have completed grading the projects or quizzes, CPMS can be used to record the scores. As teachers continue this process of developing curriculum activities and tests based on instructional objectives, they can enter the scores into the computer. Teachers can obtain a quick picture of their students' performance such as weighted averages for a section or a reporting period.

CPMS was designed using a process that included an assessment of teachers, involvement of an expert consultant in computerized performance measurement systems, a team of programmers, official educators and educational materials developers. A prototype of the system was completed for review with the field test site teachers and revisions were made incorporating their comments and those of the expert consultant.

The writing of instructional objectives tied to the content of the textbook proved to be far more complex than had been anticipated. Choices had to be made regarding the type of grading system to be used and the number of performance measures to be established. Since electronic gradebooks are not in wide use in classrooms, the development of a user friendly system with an easy-to-follow user manual was considered of major importance. Strategies for convincing teachers of the utility of this product were discussed, developed, and written into the user manual.

WORLD HISTORY DATABASE

Macro's World History Database with its simple-to-use database manager, organized format, uncluttered screen designs, and carefully crafted lessons is especially suited for the ability-integrated classroom. The structured design makes it an excellent tool for students who need structure; its collection of world history data is eclectic enough to attract the most serious scholar.

Lessons lead students through a step-by-step approach to building a hypothesis and testing it. The student is always in control of the speed and length of time devoted to searching the database. Of course, after students and instructors become familiar with the material in the database and the functions of the database manager, they may develop their own questions, new hypotheses and different ways of using this information-packed instructional asset.

Macro's World History Data diskette runs on an Apple II, II+, IIe, or IIc computer with at least 64k of memory and one disk drive. While a printer may be useful, it is not necessary.

The three files are:

- A collection of FAMILY PROFILES, representing a cross section of people from different times and in different economic, social, and cultural settings
- DISCOVERIES AND INVENTIONS, from the domestication of animals in 9000 B.C. to 20th Century technology
- WORLD POPULATIONS, from the year 400 B.C. to a projection for the year 2000

The design of this database, its manager and lessons, from conception to completion, has had as its primary goal, the development of critical thinking skills. Through the use of this program, students are encouraged to:

- Order and sort data
- Form concepts
- Set priorities in the use of criteria
- Give examples as evidence
- Discern relationships
- Compare and contrast
- Make inferences
- Support judgments with reason
- Problem solve
- Construct hypotheses and make predictions

Each lesson hypothesis serves as a vehicle for additional research, using information from other files in the database and the unlimited resources of books, film, museums and

primary materials. When students have completed one or two "missions" and are familiar with the operation of the manager, they are encouraged to explore a file, make connections and links in the data, and form hypotheses of their own. Students then become working historians.

Term paper ideas may germinate from exploring the data in the files. The files can be used as a research tool in developing a term paper theme from some other source. Using an outline world or area map along with the lessons provided on diskette or paper lessons, students might extend their learning by practicing map skills. Information from the database offers an excellent opportunity for students to improve their skills in the construction of meaningful graphs and charts. Three charts, one for each file, are provided on reproducible paper in the Teacher's Guide. They were designed for student use when recording data collected in a data search.

The task of creating a balanced sample of World History for use by high school students on a microcomputer was a tremendous challenge. The designers researched the data and wrote the lessons in the belief that when historic facts are made easily accessible through the use of a well designed database, students will be challenged to use critical and creative thinking. Work went forward with this goal in mind and with respect for the student and teacher who will use this product.

Early design discussions centered on how to look at history in a way that cuts across time, civilizations and nations, and focuses on change. Research on the project continued for seven months and attracted the interest and contributions of many scholars and historians.

The collection of facts gathered was finally culled and organized into three files of data. Each is accompanied by a comprehensive bibliography and annotations.

GUIDEBOOK FOR TEXTBOOK ADAPTATIONS

This product is designed to help developers and textbook publishers meet the needs of teachers with mainstreamed students. It guides developers of materials in the process of textbook adaptation.

The Guidebook discusses what is meant by adaptation and the key considerations in choosing to adapt a particular textbook. The advantages and benefits of adaptation as well as publisher considerations are presented.

Needs assessment, an important first step in the adaptation process, is explored. The needs of the publisher, author, school systems, teachers, and students that must be identified and utilized in determining the type of curriculum adaptations and the types of products to be created is discussed.

The Guidebook then presents strategies and illustrative adapted materials. These products include audiocassettes, computer software, print supplements, and other media.

IV. THE FIELD TESTING

IV. THE FIELD TESTING

The field testing process involved the selection and training of site team leaders and teachers and the formative evaluation of the materials.

During the second month of the project, Macro selected and trained the field site personnel to prepare them for their role in the development and formative evaluation of the supplemental materials. Macro used a criterion-referenced selection process to determine one team leader, three regular classroom teachers, and one resource teacher for each site. Selection criteria for team leaders included supervisory experience; work with handicapped learners or their teachers; and ability to coordinate activities, work independently and cooperatively with a variety of persons, and provide leadership as required. Criteria for team teachers included experience and/or willingness to work with handicapped students and willingness to attend meetings and provide data as requested. All field site personnel were selected using input and recommendations from school administrators and supervisors.

The training of each team was ongoing and included an initial orientation meeting at Macro Headquarters in Silver Spring, site visits, and frequent written and telephone communication. The orientation meeting was held at Macro headquarters for all site team leaders to acquaint them with the objectives of the project and clarify their roles, responsibilities, and tasks. Each site team leader provided technical assistance to teachers through individual and group meetings and classroom visits during the course of the evaluation process.

1. FORMATIVE EVALUATION

Background

The development of the supplemental curriculum materials was based on a formative evaluation process. This cyclical feedback process involves input from the key groups involved in the development, publication, and ultimate purchase and classroom use of the

materials. The needs and objectives of the various groups are incorporated into the curriculum materials as they are developed, implemented in the schools, and revised. This process of adapting, field-testing, evaluating, and revising ensures that the final curriculum package is a viable product both educationally and commercially.

In designing our formative evaluation process, the Macro project team considered many factors. First, the process should involve initial input (needs assessment and identification) and ongoing feedback throughout the development phase from all parties, including:

- Participating sites
  - State and local school system administrators and curriculum specialists
  - Site team leaders
  - Participating teachers
- Publisher
- Author
- Social Studies Specialist
- Software developers

The feedback loop and communications process must be flexible and fluid so that constructive and creative suggestions are not stifled from any party involved. Second, the formative evaluation process must be simple and easy to understand and implement. The formative evaluation process must support the materials development efforts rather than burden them. Third, clearly defined criteria must establish the parameters of the final form of materials. Clearly defined and agreed-upon criteria will help to ensure a quality product by building in the necessary quality control assurances. Fourth, the formative evaluation process must conform to the school year and the instructional sequence used by participating teachers.

Simply speaking, the formative evaluation involves a cycle of activities, including: (1) identifying needs, (2) adapting materials, (3) sharing materials, (4) implementing curriculum adaptations, and (5) evaluating materials.

Process

Exhibit IV-1 illustrates the cyclical nature of formative evaluation. Each of the components is described briefly below.

(1) Identifying Needs

Macro's approach to the curriculum adaptations was to base their development on a careful analysis of the needs of all parties involved. Three types of assessments were conducted to achieve this product objective: (1) an instructional needs assessment to determine the educational requirements of the curriculum supplements; (2) a publisher's needs assessment to determine the conditions necessary for the publisher to assume production and marketing of the adapted materials; and (3) the author's needs assessment to determine guidelines for adapting materials which would maintain the integrity of the text. The results of these assessments were analyzed to determine the goals and objectives of the curriculum adaptations. This process must be already completed before the cycle begins.

(2) Adapting Materials

Prototype materials were developed by the Macro Curriculum specialists based on the goals and objectives resulting from the needs assessment. Revisions to the adapted materials were ongoing throughout the formative evaluation cycle, based upon criteria suggested by the needs assessments.

(3) Sharing Materials

As they were developed, the adapted materials were shared with the publisher and the social studies consultant. Feedback was solicited and incorporated into immediate revisions prior to their classroom use.

(4) Implementing Curriculum Adaptations

Participating teachers were trained in the use of these materials *prior to* incorporating them into their regular classroom instruction. Each teacher recorded the classroom use of the materials, and their effectiveness with the target population. Site team leaders periodically observed team teachers' use of the materials in their classrooms.

(5) Evaluating Materials

Several times during the implementation stage, the participating teachers, under the direction of the site team leaders, met to evaluate the materials and suggest revisions. Interactive group discussions supplemented with written observations were used to obtain the feedback necessary to identify substantive modifications. The evaluation results were compared to the criteria established for the curriculum adaptations. When the materials were perceived to meet all standards as judged by the concerned parties, they were considered ready for final revisions and production.

2. EVALUATION PROCEDURES AND OUTCOMES

The curriculum materials were evaluated by each of the five site teams, the social studies specialist and by representatives from Ginn and Company. The results of the evaluations determined whether the materials met the criteria for final production or whether revisions were needed.

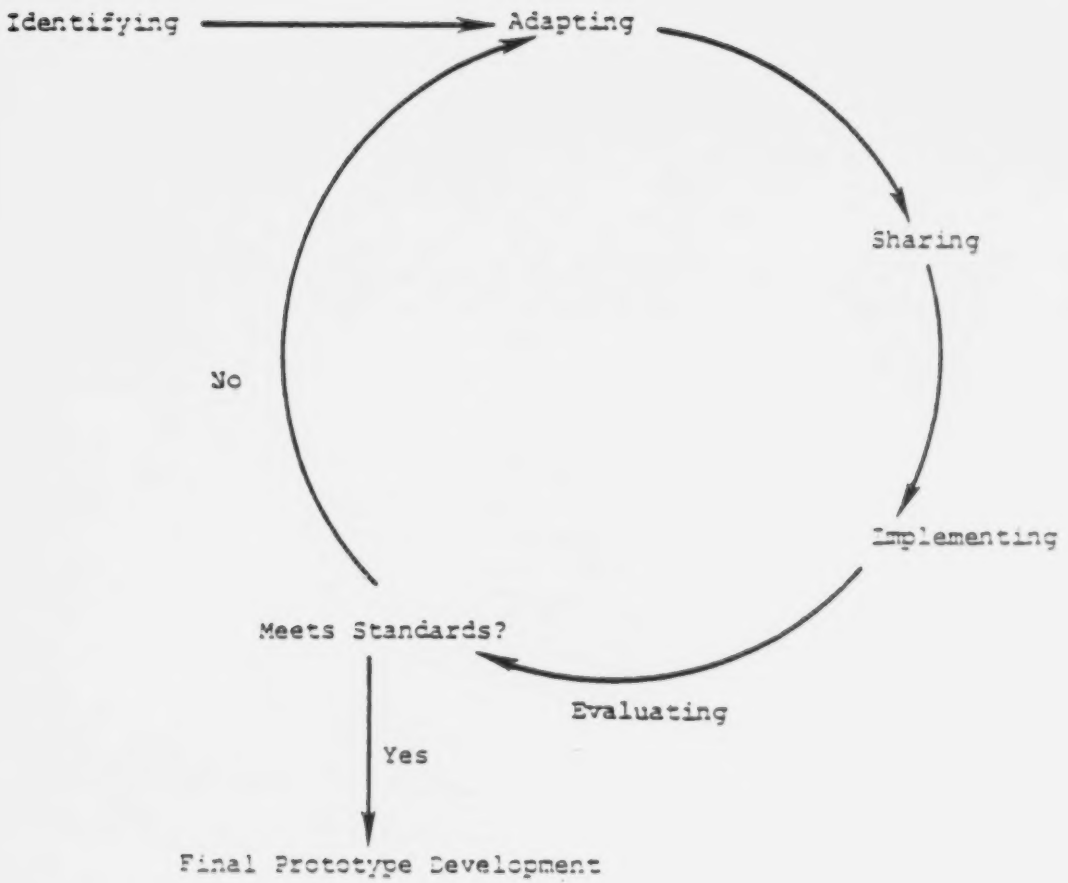
The site team evaluations were conducted individually and in group meetings, led by the site team leaders. The teachers completed an evaluation checklist prior to and in preparation for group discussions. The purpose of the group discussions was to arrive at the site teams' best thinking on the effectiveness of the adapted materials and to obtain suggestions for revisions.

A Macro project team member visited each of the five field test sites for purposes of evaluating the materials. Teachers were observed in their classrooms, and a group meeting was convened at each site to collect formative evaluation data. In many cases,

EXHIBIT IV-1

Department of Education

FORMATIVE EVALUATION PROCESS



teachers were met with individually to explore in more depth concerns relating to the materials' development. At one school, groups of students were met with to discuss their use and attitude toward the text and the adapted materials.

Materials were also evaluated by the social studies specialist to ensure that the historical content of the curriculum was correct and appropriate. The specialist reviewed the key vocabulary, the student worksheets, and the chapter previews and summaries and suggested changes or noted inaccuracies in the historical information.

Ginn was sent print materials as they were developed, but their responses were not forthcoming as had been anticipated. Some personnel changes and other product deadlines intervened. When the Teacher's Guide was nearly completed, a new editor reviewed it and questioned its usefulness to teachers, but made no constructive criticism or suggestions for changes.

Results of the site team evaluations were analyzed by the Macro project staff to determine needed revisions and suggestions. On the basis of these evaluations and extensive discussions the appropriateness of the materials was ensured.

The following are the site team evaluations of the Teachers' Guide and chapter materials for Our Common Heritage, the CPMS, and the World History Database.

(1) Print Materials

March 1984—A Macro team member presented materials at each of the five sites and asked a series of questions to elicit teacher responses. Highlights of this evaluation included:

- Teachers felt that the chapter previews and summaries will be effective in working with their mainstreamed mildly handicapped students. They stated that the reading level, length, and format are appropriate and that the materials are reflective of key ideas.
- Teachers were enthusiastic about audiocassettes and responded to the synopsis of topics for the series with several suggestions.

- Teachers were presented with a demonstration disk of the instructional management system and were asked questions about the utility of the approach of this system.

May 1984—The proposed Teacher's Guide for our Common Heritage and supplemental student materials were sent to each of the five field sites for their use and review. Teachers at each of the sites evaluated the materials, and they shared their responses either at an individual meeting with the site team leader or at a team meeting. Their reactions were highly favorable and included several recommendations for changes or additions. The following highlights are representative of their responses:

- The Chapter Notes are very readable and understandable; the suggestions for alternative strategies are useful and provide motivation for students with special needs; suggestions for relating the past to the present are highly effective.
- The approach of defining goals, enabling objectives, and skill development objectives is excellent; the selected goals and objectives are attainable by all students. They are good for individualizing instruction and also for identifying goals for all students in the class.
- The Previews and Summaries can be used with all students. They are easy to read and follow and especially helpful for student with attention problems.
- The student activity worksheets are very good and can serve as models for teacher-created materials; using the illustrations and other graphics in the text as a basis for student worksheets is good; you should consider linking the activities to a special skill development objective in a section.
- The description of the computerized instructional management system is understandable and the system appears to be very useful for record keeping and producing reports.

June 1984—Each site team leader was sent a revised and enlarged Teacher's Guide and Supplemental Student material for eight chapters. The material was reviewed by the team and their responses were recorded and discussed through telephone interviews. In general, their opinion ratings of the material were either effective or very effective. Highlights of their comments include:

- Chapter Previews were very good in that they were not oversimplified and retained the meaning of the text.

- The format and length of the Summaries make them easy for students to handle and they can be used as a foundation to build upon or as preparation for an exam.

- The student activities have a good variety of ideas and reinforce some understandings to be developed from chapter readings. They do not require too much writing.

- The Chapter Notes are good for organizing and instructing students and for pinpointing special areas of concern. It would be helpful to have the specific skills that are emphasized listed and categorized.

- The Goals and Objectives are very good to help teachers identify the purpose.

(2) Analysis Of Results Of Teacher Evaluation Of CPMS

CPMS, together with the accompanying teacher's guide, was sent to each of the five sites for their use and review. They were asked to first complete an evaluation checklist individually and then to meet as a group to discuss CPMS. Teachers were asked to record their perceptions of CPMS based on its technical characteristics and its instructional characteristics. Form A is a compilation of the results of the individual teacher review of CPMS. Form B is a summary of the results of each of the group meetings and reflects teacher discussion.

Electronic gradebooks are the "gradebook of the future" and teachers were asked to view CPMS as an innovative tool. It was suggested that they consider the use of CPMS without concern as to whether they would have access to the necessary equipment and training. Many of the comments appear, however, to reflect teacher concern about availability of equipment in their schools. Teachers appear hesitant to embrace a new way of grading when they see resource allocation as a potential problem. Print gradebooks seem adequate and familiar to teachers when they are faced with concerns about access to the computer when they need it.

Teachers seem concerned about the amount of time needed to implement CPMS. This worry may be related to the fear of the unknown and to a resistance to becoming "computer literate." These site team members did like the weighting aspects of the system and the quick averaging of scores. They are unable to envision

that the time involved will become less as they become familiar with CPMS and that these electronic calculations will indeed save them time.

In general, teachers felt that CPMS was technically well done and user friendly. These reviewers had little trouble finding their way through the system. It may be that displaying commands at the bottom of the screen for universal escape or help is an important "comfort" component for inexperienced users.

The majority of these teachers were novitiates in the use of computers both for grading and for student educational use. The site team leaders varied in their level of computer experience. One site team leader has used electronic grading. Scores at this site were consistently higher than those at other sites. It may well be that this team leader could confidently lead her team through a group review and discussion, resulting in teachers focusing less on their fear of computers and more on the software itself.

The use of objectives grading varied from site to site. One site stated that its school system would be moving to objectives grading in the near future and that CPMS's computerized system based on objectives in the text was a strong point. Other sites were not using objectives as a basis for reading and voiced the familiar fear of the unknown. The use of the textbook as a basis for developing objectives and using them to measure student performance also varied from site to site and from teacher to teacher. Some school systems have curriculum goals that fit nicely into the CPMS structure. Others are resistant to teaching that measures progress in small increments of learning. As is often the case, some teachers are interested in experimenting with different ways of doing things and others just want to stick with the familiar. Grading by objectives does require a shift in approach and a willingness to be open to new ideas.

CPMS review suggests that the system would also be useful for special education teachers and those resource teachers who work with small number of students. It seems that an approach using objectives that are tied into an educational plan or textbook is highly conducive to teaching learners with a variety of educational needs. Teaching in smaller increments and closely measuring success has always been strongly emphasized with special learners.

Electronic gradebooks and the measuring of student performance by objectives tied to a textbook are approaches that require some rethinking on the part of our educators. They also require a willingness to try new ways of doing things. It may well be that they can enhance student learning, make some of the tedious aspects of grading less time-consuming, and provide a systematic method for relating achievement to what we really are teaching.

(3) Analysis Of Results Of Field Site Review Of Macro World History Database

The World History Database and the accompanying teacher's guide were sent to each of the five sites to examine, use and critique. Teachers were asked to review the software with all of their students, and in particular with their their mainstreamed handicapped students, in teams or pairs. They were also asked to complete an evaluation checklist individually and then to meet as a group to discuss the software. Teachers recorded their perceptions of the entire database, and also specific segments of the software package including instructional characteristics of the teachers' guide, technical characteristics of the software, characteristics of the Simple Sort file manager, and general issues on specific parts of the program.

Generally, teachers found the World History Database challenging, although some found difficulty in manipulating the facts. This may be related to their fear of computers or simply to their lack of experience with them. The site team leader in one school noted that the teacher who had the most difficulty with the database had little knowledge of computers. Those teachers and site team leaders who were computer literate found the database easier to use. Several teachers felt that if they had had more practice with the database, they could have grown more comfortable with its use, for both themselves and their students.

Most teachers felt that the detailed content of the lessons and files was very stimulating. The wealth of information was stressed by most teachers. They found that students enjoyed the content primarily because it was on the computer, but also because they found the facts interesting. Teachers also noted that the encouragement of critical thinking skills is a strongpoint of the software. The teachers found the three specific content areas interesting and stimulating. They liked the variety

of topics and the wide range of facts. They thought the questions were interesting and logical. Some teachers had difficulty sifting through the detail to answer the questions.

Many of the teachers felt that the instructions for using the lessons included in the software were difficult. They found it hard to move from one question to another or from one section to another. Many teachers also noted that more "help" is needed or should be made more accessible. Problems such as ease of movement within the program have been remedied. The teachers' guide, revised in response to teachers' evaluation, will also alleviate some of these difficulties.

Overall, teachers found the teacher's guide very useful. The purpose was well defined, the instructions were comprehensive, and the print materials could be integrated into a world history curriculum. Several sites stated that the operation of the database itself could be more fully explained. These instructions have been expanded in the revised teacher's guide. One site commented that the teacher's guide was one of the best guides they have ever seen in terms of its lessons and suggestions for how to work with the students.

Specific teacher responses are detailed in the following exhibit. The chart contains a compilation of the results of the individual teacher review of the database. Due to the unavailability of an Apple computer with 64K memory at the time of field testing, the Wakefield Senior High School teachers and students were unable to use the software; their evaluation is therefore limited in technical considerations and user response.

KEY: n = Number of teachers responding
1 = Excellent
2 = Satisfactory
3 = Unsatisfactory

EXHIBIT IV-1

Department of Education

REVIEW OF MACRO WORLD HISTORY DATABASE

	SCHOOL (Mean Rating)					
	Andover n = 4	Boulder n = 4	Kenmore n = 4	Libbey n = 3	Wakefield n = 5	Total
Instructional Characteristics Of The Teacher's Guide						
. Purpose is well defined	2.3	1.0	2.3	1.0	1.0	1.5
. Print instructions are comprehensive	2.9	1.0	2.3	1.7	1.0	1.8
. Print instructions clearly explain how the database operates	3.0	2.7	2.7	1.7	1.0	2.2
. Lessons are useful	1.0	1.5	2.7	1.7	1.0	1.6
. Lessons are helpful to handicapped students	1.3	1.5	3.0	1.7	1.2	1.7
. Materials can be integrated into world history curriculum	1.4	1.0	2.5	2.0	1.0	1.6
Technical Characteristics Of Macro's World History Database Software						
. Text narrative on computer monitor is clear and easy to read	1.3	1.0	2.0	2.3	N/A	1.7
. Text narrative on computer is appropriate length	1.0	1.5	1.7	2.0	N/A	1.6
. External documentation is well written and useful	2.3	1.5	2.5	1.7	N/A	2.0
. Program can be used with minimal amount of computer knowledge	3.0	2.25	3.0	1.3	N/A	2.4
. Help is provided and is accessible in time of need	2.7	3.0	2.7	2.3	N/A	2.7
. User can easily exit the program, return to menus, or move to another operation	3.0	2.3	2.7	2.0	N/A	2.5
. Error messages are clear and provide directions	2.7	2.7	2.7	1.7	N/A	2.4
. Procedures for using the system are consistent and logical	2.0	1.5	2.7	1.7	N/A	2.0
. Program is free of programming and operational errors	3.0	2.5	2.3	2.0	N/A	2.4
Characteristics Of The File Manager						
The Simple Sort File Manager						
. Selecting records	1.7	1.7	2.3	1.7	N/A	1.8
. Putting records in order	1.7	1.3	2.3	2.0	N/A	1.7
. Displaying and viewing the data	1.3	1.5	2.3	2.0	N/A	1.7
. Printing	1.3	1.0	2.5	1.5	N/A	1.6
. Statistics, summaries, subtotals	1.7	1.3	2.0	1.7	N/A	1.7
. Messages and prompts	2.3	2.3	2.3	1.7	N/A	2.1
Introductions To The Files						
. Language level	1.7	1.5	2.3	1.3	N/A	1.7
. Definitions	1.3	1.5	2.5	1.7	N/A	1.8
. Readability, screen appearance	1.0	1.5	2.0	2.7	N/A	1.8
On-Diskette Tutorial						
. Functions covered	1.7	2.0	2.5	2.0	N/A	2.3
. Language level	1.3	1.5	2.3	2.0	N/A	1.8
. Readability, screen appearance	1.0	1.5	2.0	2.0	N/A	1.6
Lessons						
. Language level	2.0	1.5	2.3	1.3	N/A	1.8
. Ease of use	3.0	2.3	2.7	2.0	N/A	2.5
. Readability, screen appearance	1.0	1.5	2.3	2.3	N/A	1.8
The Files						
. Style of designating years	1.0	1.0	2.0	1.7	N/A	1.4
. Readability of large numbers	1.3	1.0	2.0	2.0	N/A	1.6
. Language level	2.0	1.5	2.3	1.7	N/A	1.9
. Abbreviations in field names	1.5	1.0	2.0	2.0	N/A	1.6

V. MARKETING THE MATERIALS

The major thrust of this RFP and Macro's response was the design and development of materials that would supplement an existing textbook and become readily available to teachers of mainstreamed mildly handicapped senior high school students. Commercial viability has always represented an important goal to ensure widespread dissemination.

Clearly, the logical market for the materials is the publisher of the textbook being adapted. Indeed, a requirement of the RFP was an agreement with a textbook publisher to support the project and permit its copyrighted materials to be adapted for this purpose. In return, the publisher was granted first right to publish the new materials.

From the beginning of the project, Macro was focused on the needs of the marketplace, conducting the delicate balancing act between the thirst of teachers for a profusion of materials and the more conservative thinking of the publisher.

The Audiocassette Tapes

Early in the project, Ginn and Company indicated that they were not interested in publishing audiocassette tapes because the production of this type of media is outside their normal operation. An important component of Macro's proposal to OSEP was the use of audiocassettes as a strategy for adaptation. Macro proceeded to request a contract modification to prepare the audiocassette tapes as a generic supplementary instructional package.

Macro's experience in marketing a set of American History audiocassettes (completed under another OSEP contract) to Developmental Learning Materials (DLM) was an indication that publishers in the special education area find these products acceptable, innovative, and commercially viable. In fact, DLM expressed an interest in the World History audiocassette tapes even before they were completed. We sent 16 audiocassette tape segments with accompanying teacher's guide and student worksheets

to them as soon as they were completed. Within the week, we received a call indicating their interest in publishing these supplementary materials. We obtained ED permission to copyright, filed the appropriate papers with the copyright office, and received a Certificate of Copyright Registration.

A contract was negotiated between Macro and DLM in February 1985, calling for the payment of royalties by DLM of 8 percent on gross sales, of which the U.S. Treasury will get one-half, or 4 percent. The materials will be packaged attractively, promoted vigorously, and available by January 1986.

The Supplementary Teachers Guide With Student Worksheet

In response to the results of the assessment activities, Macro developed a print product focusing on providing regular social studies teachers who have mildly handicapped students mainstreamed into their classrooms with ideas and suggestions for meeting the special learning needs of these youngsters. Student worksheets for each chapter of the Ginn text were prepared, field-tested, and revised. The completed product was submitted to Ginn and Company for publication as a supplementary teacher's guide. Ginn rejected publication of the guide, but wrote to Macro commending the work done and the awareness that the effort had raised at Ginn to the need for providing teachers with a broad range of ability-level materials.

Because the bulk of this print product is so tightly tied to the Ginn textbook Our Common Heritage, it has no other publication potential. However, revisions of the sections on meeting special learning needs, developing alternative strategies, and managing the ability integrated classroom have been incorporated into the teacher's guide to accompany another product resulting from this contract.

The Computerized Performance Management System

Another product designed and developed as part of this contract is computer software that can serve as an electronic gradebook for world history classroom teachers using the textbook Our Common Heritage. It was prepared to meet the needs of the teacher with an ability-integrated classroom who wants to monitor student performance closely, have a record of student status, and documentation that will be useful for

discussions with parents and colleagues. The software design is a simple one, using the Apple Basic language. It is organized to be compatible with the textbook Our Common Heritage, with objectives on the screen for each section of each chapter.

When it was demonstrated to Ginn and Company in their offices in Lexington, they were enthusiastic about it as a supplementary product to accompany their textbook. However, decisionmaking at this company takes place over a long and circuitous route. Months passed. Continuing interest in the product was communicated by phone, yet no formal negotiations were begun. We obtained permission to copyright, applied for and received the Certificate of Copyright Registration on this product. Finally, in April, we received a letter from Tyra Sidberry of Ginn and Company indicating they would be willing to "consider" requisition of this product for $10,000 with no royalties to be paid.

Because Macro's excess costs to produce this product (primarily programmer time) were so high, we asked the Copyright Administrator for a waiver of the Federal share of royalties. Although that waiver has not arrived in this office to date, we have been assured that it is forthcoming.

In May, Ginn and Company was sold by its parent company, Xerox, to Gulf and Western Publishing. This event has effectively paralyzed Ginn in terms of any decisionmaking. A new mission for the company has not yet been defined, but it may include a halt to all electronic publishing. It may even result in the transfer of all high school textbook publishing to another Gulf and Western subsidiary.

In June, we received a letter from Tyra Sidberry relinquishing the Ginn rights to publish and encouraging us to seek another publisher. The letter also included a request that we come back to them before actually concluding an agreement with another publisher.

The product does have potential, because it is designed as a shell. Other objectives from other texts could be programmed into it relatively easily. The amount of revision necessary to make it attractive to another publisher will depend on what transpires in negotiations.

Grolier has already indicated an interest in the product. We have contacted LINC for assistance in developing a list of potential publishers and we will continue to market the product vigorously.

Macro's World History Database

The primary technology product of this contract is a world history database coupled with a simple-to-use file manager, which is copyrighted by Intentional Educations, a well-known and respected software developer. Original plans to tie it closely to the textbook, Our Common Heritage, were abandoned when Ginn suggested that they would prefer a product that could be used with other world history texts. From the first discussion with Ginn about this product, they were optimistic about its potential.

Glitches in the production of the software occurred when Intentional Educations ran into problems with the file manager. Since we had negotiated a low price subcontract with Intentional Educations because another company was supporting the development of the file manager, we were held hostage to the delays inflicted by their slow response to specifications, holding up approvals and reversing earlier decisions.

Finally, Intentional Educations severed the relationship with the company supporting the development of the file manager, but by then we were off schedule and it became necessary to ask for a six-month extension.

The product was finished in May and went to field testing. However, as was noted earlier, by then Ginn and Company was in the process of being sold by its parent company to Gulf and Western Publishing and unable to move on acquiring this product. Although they remain very interested in this product, they have relinquished their first right to publish.

We are in the process of preparing a marketing plan for this product and feel assured that it will be published. LINC has agreed to develop a list of potential publishers and our own contacts are not inconsiderable.

Guidebook For Textbook Adaptation

In order to assist educators, developers, and publishers in understanding the need and the process of adapting regular textbook materials with supplements that can help mildly handicapped, mainstreamed students, Macro has prepared a guide.

The material has been prepared generically rather than focusing on any particular content area or age group. It is quite possible that we could get this published by one of the special education publications such as Focus on Exceptional Children.

VI. SUMMARY

Over the course of this project, Macro has consistently focused attention on meeting the special needs of mildly handicapped mainstreamed senior high school students and their teachers through creative, innovative, well-designed and executed materials that carry no stigma, imply no pejorative labels and invoke no negative images. These are materials that reflect good educational practice for all students, that enhance the classroom environment and extend the opportunities for learning world history.

We are confident that these supplementary instructional materials will be published and that commercial dissemination and distribution will result in their widest possible availability to all teachers who care about meeting the individual needs of students at different ability levels.

As is usually true in projects of this nature, the Macro staff learned and grew in experience and understanding of the needs of the target population of students and teachers and of the pressures and realities of the marketplace. We thank the Department of Education, Office of Special Education Programs for providing us the opportunity to make a contribution to the field and to the youngsters whose potential gain is our greatest reward.

APPENDIX A

GUIDE TO TEXTBOOK ADAPTATION

GUIDE TO TEXTBOOK ADAPTATION

INTRODUCTION

The special education movement of the 1960s concentrated curriculum development and teacher training efforts in the separate special education classrooms of the nation's elementary schools. By 1975, with the "least restrictive environment" mandate of Public Law 94-142, this strategy for educating handicapped students was well entrenched, leaving a gap between public policy and the capability of the nation's schools to respond. Even into the 1980s, this gap continues. The demand for serving handicapped youth in the regular classrooms is significantly impaired by the lack of both training and materials development, especially at the secondary level. Faced with this need to teach a diverse group of learners in one classroom, many secondary schools were forced to embark on the long and costly process of developing their own curriculum adaptations for the mainstreamed handicapped learner.

The U.S. Department of Education, recognizing this need for secondary-level curriculum adaptations, in 1982 and again in 1983, solicited competitive proposals from qualified bidders to develop curriculum adaptations as supplementary material to published texts. The objectives were both to improve the quality of instruction provided to handicapped youngsters and to stimulate publishers to develop similar curriculum supplements aimed at this population.

The request for proposals from the Department of Education posed a challenge to prospective curriculum designers to develop a working relationship among the diverse groups involved in such an educational-business venture. The final curriculum product, to be successful, must incorporate in its development the needs of classroom teachers, handicapped students, school systems, curriculum specialists, subject matter experts, the publisher, and the author. The proposed curriculum adaptations, must meet the specifications of all these groups.

Macro Systems, Inc., was awarded contracts by the Department of Education in 1982 and again in 1983. Macro Systems is an applied research and management consulting firm, which has won recognition for the quality of its work in human services support and evaluation. Macro's 16-year corporate experience in curriculum and materials development and in human services evaluation and training is augmented by the personal experience of its project team members in special education programming and curriculum design and in educational research and evaluation.

Macro staff gained experience and expertise in the performance of the first contract award in 1982 by the Department of Education. This contract focused on the development of supplementary materials to accompany a middle school social studies text. Materials were created to meet the needs of mildly handicapped middle school students mainstreamed into regular classrooms.

The Macro project team selected for the second contract a senior high school social studies text for the curriculum adaptations. The text and teacher's guide were readily

adaptable in content, format, and skill level for the needs of mildly handicapped mainstreamed high school youth.

The major thrust of Macro's approach to textbook adaptation is to make maximum use of the knowledge, skills, and professional judgement of the classroom teachers who daily face the challenges of educating handicapped students. At selected schools that serves as test sites, a team of teachers and Macro project staff work together to identify the learning characteristics and needs of both the handicapped students and their teachers. Using these assessed needs and characteristics as guidelines, the Macro curriculum specialists develop supplemental materials to bridge the identified gaps between the content and format of the text and the capabilities of the handicapped students. Classroom teachers, with assistance and training from Macro staff, put the materials to use in their classrooms. As a team, the teachers assess the effectiveness of the materials in meeting both classroom management and handicapped learners' needs. Revisions of the materials are based on the classroom experience of these teachers with their students.

TEXTBOOK ADAPTATION—A RATIONAL

The reasons for adapting textbooks to meet the needs of mildly handicapped mainstreamed students are many. Regular classroom teachers are assuming more responsibility for teaching handicapped students and they need materials and training to prepare and support them in this role.

Typically, the characteristics of regular classroom teaching are not conductive to addressing individual learning styles of students or to accommodating teaching strategies to meet student needs. Most teachers are instructing large numbers of students. The demands on their time result in little time to develop and implement a specialized plan for any student with special instructions needs. Lecture and discussion combined with the ever present textbook are the most widely used instructional practices. These strategies are limited in their effectiveness with handicapped students who profit from individualized materials and alternative learning modalities.

A significant vacuum exists in both the creation and the adaptation of materials for handicapped students placed in the regular class. The 'equal' provision of P.L. 94-142 suggests that these mainstreamed students should participate, whenever possible, in instructional activities alongside their nonhandicapped peers. Adaptive, supplementary materials to the main text are one way of meeting this provision and enabling the teacher to provide assistance in a time-efficient fashion.

The benefits of adapting materials for mildly handicapped students are many. Mainstreaming for academic instruction is usually determined on the basis of an individual student's ability to function at or near the level of the nonhandicapped student in a specific content area. However, many instructional materials, especially at the senior high level, tend to require more sophisticated analysis and synthesis. Print materials require advanced vocabulary development, and the pace of instruction presumes an ability to absorb information rapidly. Clearly, mildly handicapped students in these settings can profit from supplemental materials that present concepts in more palatable increments, use vocabulary that communicated those concepts more simply, deal with reading comprehension and language skills, and focus on developing listening and attending skills.

Since many mildly handicapped students suffer from poorly developed listening and attending skills, they profit from educational strategies that aim to strengthen their ability to integrate ideas and information obtained through an oral medium. For example, audiocassettes are an effective vehicle for communicating important concepts in a simplified way and, at the same time, developing listening and attending skills. This oral medium, like the microcomputer, invites active involvement. When the material included in the audiocassette is creatively produced using sound effects, music, and other enhancers, listeners are enticed and cajoled to participate, using their imaginations and full senses to interact with the sound.

A need also exists for printed supplemental materials that assist mildly handicapped students to better utilize textbooks in basic content areas. These printed materials can help mildly handicapped students develop specific skills in such areas as using charts and graphs, increase vocabulary and reading comprehension, and learn important study skills. Their potential as homework assignments and their flexibility as independent assignments make them an attractive adaptation product.

The microcomputer is being explored as another means for adapting or supplementing print materials to meet the individualized needs of mainstreamed mildly handicapped students. The capabilities of a microcomputer—high resolution graphics, visual and other sensory immediate feedback, and allowance for student self-pacing and timing—make it highly conductive to individualized instruction. The microcomputer requires active engagement on the part of the student, stimulates curiosity, and is an attractive device for producing high attention to task.

High school mildly handicapped youth can especially benefit from exposure to the microcomputer. These students are a transitional group in this new "information age", having had little or no experience with computers during their elementary and junior high school years. Today's elementary aged student will have many opportunities to work with the computer and will eventually use it as extensively as paper and pencil. High school handicapped students about to graduate will have to be able to handle the "information age" or will find themselves unable to deal effectively with their environment and to obtain and hold a job.

The microcomputer can also assist teachers in management tasks such as keeping student records and managing curriculum information. Instructional management software can help teachers with requirements of the Individualized Education Plan by keeping track of objectives, methods, and materials used in the social studies program. Teachers can monitor student progress on specific lessons and use the information in student reports for parents. The use of microcomputers to collect, organize, store, and retrieve a variety of information can help teachers carry out instructional, organizational, and administrative tasks in less time, leaving them more time for other responsibilities.

Given the tremendous capability of microcomputers, the quality of presently available educational software has been disappointing. There has been a short supply of programmers and curriculum experts qualified to produce educational software. In addition, publishers have been hesitant to risk development money. Handicapped students have suffered from an extremely limited quantity of software.

A PROCESS APPROACH TO ADAPTING TEXTBOOKS

The American College Dictionary defines adaptation as "a. alteration in the structure or function of organisms which fits them to survive and multiply in a changed environment. A form or structure modified to fit a changed environment." These definitions support an approach to curriculum adaptation which stresses the interaction of the organisms—teacher and student—with the form and structure; in this case, materials and school setting.

Successful adaptation is a process that is "learner centered." It requires changes not only in the format, content, and method of presentation of the material but also in the methods and style of instruction used by the teacher in response to the needs and behaviors of the students. This process results in the development of materials—for both the teacher and the students—that ultimately help students learn more successfully alongside their nonhandicapped peers.

Key Considerations

The accommodation of the mildly handicapped learner in the regular classroom is a sound educational practice if the general curriculum can be adapted to incorporate both the instructional needs of the teachers and the learning needs of these students without detriment to the needs of the regular classroom students. Learning principles and methods that apply to the needs of these special students and their teachers can be applied as an enrichment to the total classroom learning environment, benefiting not only the mildly handicapped students for whom they are designed but the nonhandicapped students who share some of their educational needs, characteristics, and opportunities.

Instructional adaptations can take two basic forms: one set of materials for the teacher and another for the mildly handicapped students themselves. Development of these materials should integrate the assessed needs of all those involved in the educational effort, from the classroom teacher and student, to the school administrators at local and State levels, to the publisher whose text provides the basis for adaptation.

There are key considerations that are critical to the development of successful adaptation materials.

- Identifying the learning needs that are common to the mildly mentally retarded, learning disabled, and emotionally disturbed students who constitute the targeted population of mildly handicapped students. A focus on the needs most common to the three groups increases the wider use of the materials by regular students and the generalizability of the methods to other subject matter.

- Incorporating the instructional needs of the classroom teachers who teach this target population. Instructional needs are broadly defined to include the teachers' knowledge of this student population, skills in classroom management, and teaching methods and materials specific to those special students.

- Determining the production and marketing needs of the publisher and author. In order to convince publishers and authors of the visibility of textbook adaptation, the product as an economic and educational commodity must be capable of providing economic returns to publishers and educational returns to buyers. This suggests the need to meet both publisher specifications in terms of production and marketing and author specifications in terms of curriculum content and objectives.

- Developing goals and objectives based on these findings. The specific goals and objectives of the adaptation products should be responsive to an amalgam of the needs of teachers, students and publishers, and balance their diverse needs.

- Equipping students with skills that can enhance their employability. At the senior high school level it becomes critically important to attend to future prospects of these mildly handicapped mainstreamed youth. By including a computer software component geared to the needs and capability level of mildly handicapped youth, we are exposing these students to the coming requirements of an information age where comfort with this device may be a requisite for competing in the marketplace.

STEPS IN TEXTBOOK ADAPTATION DESIGN, DEVELOPMENT, AND EVALUATION

The textbook adaptation process should incorporate an integrated design, development and evaluation approach. Initial materials are developed, tested, revised, retested, and so forth throughout a planned sequential development/evaluation approach. These activities and their results are used to make decisions regarding modifications, adaptations, and revisions to a product throughout the development phase. The design, development and evaluation activities are closely intertwined, with the evaluation activities supporting the development activities.

The process should involve initial input and ongoing feedback throughout the development phase from all parties involved and these may include teachers, school administrations, curriculum supervisors and specialists, author and publisher.

The input and feedback must be obtained in a systematic manner, using a standardized process to ensure comprehensiveness and usefulness. Yet, the feedback loop and communications process must be flexible and fluid so that constructive and creative suggestions are not stifled from any party involved. Attention must always be focused on the developmental activities using the evaluation results to guide the process and refine the products.

Clearly defined criteria must establish the parameters of the final form of materials. These criteria will be agreed upon by the parties involved in the adaptation process at the outset of this evaluation phase and should be used to determine when the materials are ready for final revisions and production. Clearly defined and agreed-upon criteria will help to ensure a quality product by building in the necessary quality control assurances.

The adaptation process involves a cycle of activities, including: (1) identifying needs, (2) adapting materials, (3) reviewing materials, (4) implementing curriculum adaptations, and (5) evaluating materials (see accompanying illustration on next page).

- Identifying Needs—Textbook adaptation should be based on a careful analysis of the needs of all parties involved, from the classroom teacher and student, to the school system, to the publisher, editor, and author. Two basic types of assessments can be conducted to achieve this product objective: an instructional needs assessment to determine the educational requirements of the curriculum supplements and a marketing needs assessment to determine economic requirements. Incorporating these assessed needs into the process of product development is one step in ensuring the usefulness of the final product.

  Assessment of instructional needs should focus on the classroom learning environment, encompassing the needs of both classroom and resource room teachers and the mildly handicapped students. The student profile should also be included in this assessment, as learner characteristics are essential to determining teacher and student instructional needs. The focus of this assessment process should be on those aspects of the curriculum supplements that determine their instructional usefulness: subject matter content, objectives of the material, learning strategy involved, skill and aptitude level, format, and classroom management characteristics.

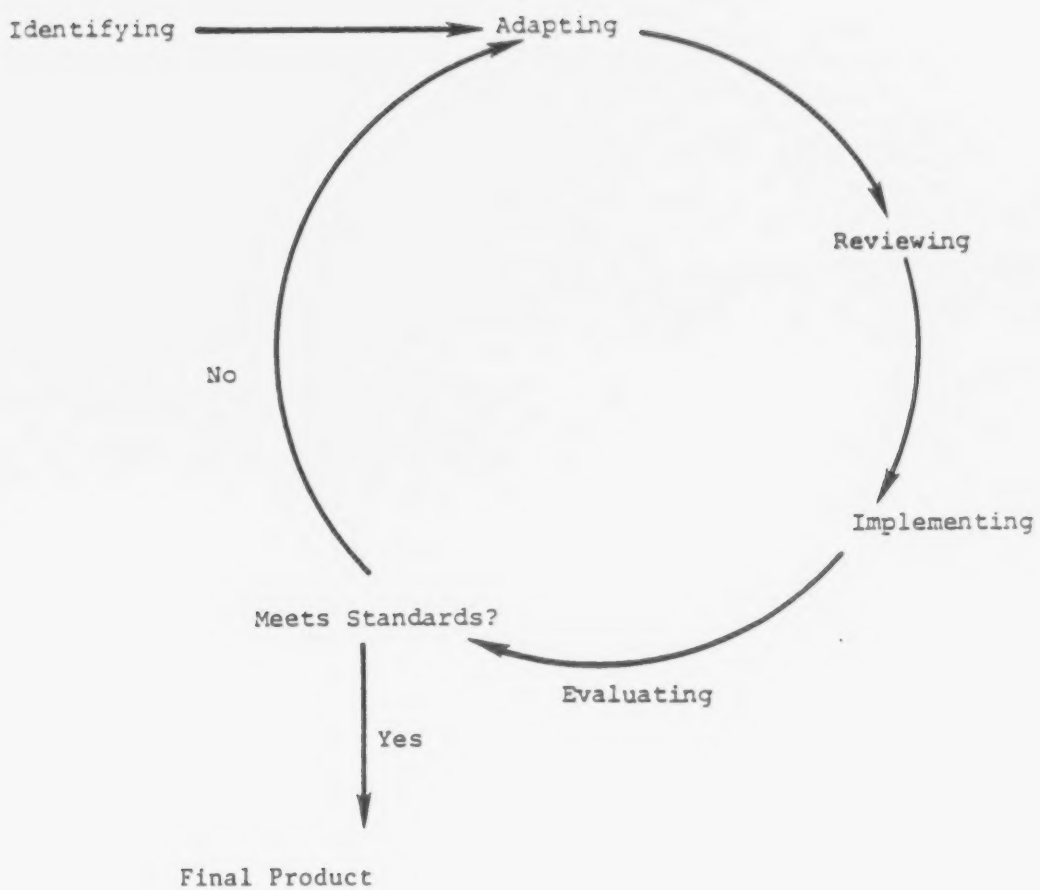
  The marketing needs assessment should address the needs of the school systems at both State and local levels and of the publisher, editor, and author of the selected text. The focus of this assessment is on those aspects of the curriculum supplements that determine their production and commodity characteristics—aspects such as cost, packaging, marketability, and distribution.

- Adapting Materials—Initially, prototype materials are produced that meet the identified goals/objectives of the curriculum adaptation and meet established evaluation standards. In later cycles, revisions to the adapted materials may be necessary to meet established standards

- Reviewing Materials—These materials are then reviewed by teachers and other involved parties for feedback. Initially, feedback is solicited and incorporated into immediate revisions prior to field testing. Later in the process the need for immediate modification is often alleviated as the curriculum designers become more proficient at meeting the perceived needs on the initial pass.

- Implementing Curriculum Adaptations—Participating teachers incorporate the use of these materials into their normal classroom instruction. They keep systematic records of their implementation of the materials with their target students and record observations of the effectiveness of these materials with specific students. Periodic classroom observations of the materials implementation are helpful, whenever they can be done.

STEPS IN ADAPTATION DESIGN, DEVELOPMENT, AND EVALUATION



- Evaluating Materials—Once the set of materials is tested, the participating teachers can be called together to solicit feedback on the effectiveness of the materials and suggested revisions. Interactive group discussions supplemented with written observations are a good vehicle for obtaining the feedback necessary to identify substantive modifications. The evaluation results are then compared to the criteria established for the curriculum adaptations. If the materials meet all standards they are ready for final revisions and production. If not, it will be necessary to continue the process, recycling to the adaptation stage and so on.

The criteria established for judging the material adaptation play a role in the adaptation process. The criteria to be developed should address questions such as:

- Are the specific curriculum adaptation objectives met?
- Is the material at an appropriate level for the target students?
- Does the material attract, stimulate, and sustain student interest?
- Do teachers find the materials helpful and convenient to use?
- Do teachers find the materials useful for their students?
- Do the adapted materials produce the type of results with the target students that the original materials produce with their target students?
- Does the adaptation meet several deficit areas of students, or does it simply meet the needs of a few students?
- Are the adaptations still true to the curriculum content?
- Are the adaptations indeed an improvement over the existing curriculum for the target students or merely a new set of curriculum materials?

A LOOK AT THE RESULTS OF NEEDS ASSESSMENT

Macro Systems conducted an instructional needs assessment of teachers on two occasions to determine the type and area of textbook adaptation to be developed. The results of these assessments do vary, yet there are similarities and commonalities in the responses that warrant consideration by anyone who wants to pursue textbook adaptation to meet the needs of mildly handicapped mainstreamed students.

- While teachers focus on the problems of handicapped students in the classroom they are also aware of their positive attributes.
- Teachers perceived that problems of reading comprehension, thinking skills, written and oral language skills, and conceptual skills are the primary learning barriers faced by mildly handicapped students.

- Teachers think that materials developed to supplement basic textbooks should capitalize on the motivation of these students to succeed and should account for alternative learning strategies and disabilities.

- Teachers that that these supplementary materials should primarily be in the form of workbooks or worksheets, audiocassettes, overhead visuals, and microcomputer software.

- In addition to the student instructional materials, teachers need, for their own use, information on methods of team teaching such as working with other teachers and specialists, methods of involving students more directly in planning and implementing curriculum activities, ways of meeting IEP objectives, and adapting both methods and materials for diverse student needs.

- Teachers have previously attempted to vary instructional delivery methods and approaches to meet the special needs of mildly handicapped students.

STUDENT LEARNING NEEDS THAT CAN BE ADDRESSED WITH ADAPTIVE MATERIALS AND STRATEGIES

The characteristics of students with learning deficits are exceedingly varied. Some characteristics appear frequently, whereas others rarely appear. Their impact on student learning and student need also varies depending on such factors as teacher, subject, environment, instructional strategy, and materials.

Although some individuals within a category may share common characteristics, and although one commonly finds stereotype references to a specific handicap, various groups of handicapped persons are not homogenous. Handicapped individuals within the same category vary. All mentally retarded learners, for example, do not have coordination difficulties nor do all learning disabled students have the same type of perceptual deficits.

Adaptive materials are not a panacea for increasing the educational success of all mildly handicapped students. Yet there are some learning needs that can be addressed with this educational intervention:

- Simplified Vocabulary—Many mildly handicapped persons have a limited reading ability and have difficulties acquiring and retaining vocabulary. They need simplified sentences and vocabulary to help in understanding material.

- Repetition—These students may have auditory and/or visual memory deficits which may lead to difficulty in the assimilation, storage, and retrieval of information. The repetition of relevant material in varying presentations and formats gives a student more opportunity to grasp the information.

- Focused Attention—It can be difficult for for mildly handicapped students to focus on any particular activity for any length of time. They are easily diverted from a simple task or are threatened by a more complex activity. These individuals need help in focusing their attention on the materials at hand. Some mildly handicapped persons are hyperactive (i.e., restless, engaged in random activity), and they too need their attention focused in order to achieve. Materials that have a dark border around them help to direct attention to the content.

- High Motivation Level—Mildly handicapped persons may have low levels of motivation and need interesting and enticing materials and innovative approaches to stimulate their learning that serve as enhancements to the basic text.

- Reinforced Concepts—Mildly handicapped students may be slower at grasping concepts. They need instruction that starts at a more concrete level, is presented in smaller steps, and allows for immediate response and feedback.

- Slower Pacing Of Program—Mildly handicapped individuals may have perceptual disorders. A student with auditory perception problems, for example, may not be able to differentiate between different sounds of consonant blends. A slower-paced, well-enunciated program helps students alleviate perceptual deficits. Some mildly handicapped persons have a slow speed of reaction and can benefit from a slower paced program that gives them time to ponder a situation.

- Positive Reinforcements—Mildly handicapped students often need to experience success to improve their self-concept and motivation. Positive reinforcement and feedback would help build confidence and stimulate learning.

- Management Of Time And Task—Mildly handicapped students may be unable to organize their work assignments efficiently and become easily frustrated. Work for these students should involve task analysis and a great deal of structure.

- Sequence Of Learning Tasks—Mildy handicapped students may be unable to perform tasks that progress from simple to complex. They need assistance in sequencing their work so that they understand the logical order of the tasks.

- Application of Previously Learned Skills—Mildly handicapped students may have great difficulty using what they have studied in one environment to a new or different context. They need direct instruction in how to transfer skills and knowledge to a new setting.

TEXTBOOK ADAPTATION MATERIALS AND STRATEGIES

Experience in the design and development of adaptive supplementary materials suggests that while the specific content of the adaptation varies and is determined through needs assessment there are characteristics of instructional adaptations that should be considered by developers. (See illustration on the next page for characteristics and examples). Teacher materials should include background information on the student population. Classroom management strategies and skills should be addressed as well as instructions for the use of the adapted materials included in the package. In preparing student materials, developers must consider the pace and interest level of the materials as well as the sequencing of instruction and the amount of material presented. Repetition and review are other critical characteristics of adaptive supplementary materials.

An analysis of the text from which the adaptive materials are being developed should include consideration of areas such as:

- Material content
  - Vocabulary and reading comprehension
  - Concept development and generalization
  - Reasoning and decisionmaking
  - Specific skill development
- Method of presentation/organization
  - Sequence of material
  - Amount of material presented
  - Method of presentation
  - Type of directions given
  - Amount of repetition and review
  - Type of evaluation and testing
- Format
  - Design, layout, and print of overall text and individual pages
  - Organization of teaching units
  - Large/small group student usage
  - Independent student usage
  - Effective use of graphic display

ADAPTATION CHARACTERISTICS FOR TEACHERS AND STUDENTS

Curriculum Supplements	Examples	Needs Served
I. Teacher Materials Characteristics		
. Background information on mildly handicapped students	. Definitions of mildly handicapping conditions . Developmental characteristics - Cognitive, social, and affective - Adaptive and nonadaptive behaviors . Learner characteristics and needs	To provide teachers with sound knowledge base to understand the mildly handicapped students in their classrooms
. Classroom management skills	. Grouping by instructional needs . Non-teacher-directed instructional techniques . Methods of recording student progress . Student motivational techniques	To provide teachers with skills and techniques to structure and manage a multilevel and multi-activity learning environment
. Instructions for use of adapted curriculum materials	. Instructional objectives . Teaching suggestions . Learner activities . Problem identification and correction . Use of audiocassettes and computer software . Use of evaluation materials	To instruct teachers in appropriate use of adapted materials for various learner needs and instructional purposes
II. Student Materials Characteristics		
. Self-instructional . Self-paced . Small instructional units	. Prescribed learning activities based on selected segments from text	Teachers need for materials for independent use by students
. Careful sequencing of instruction . Concrete illustrations and examples . Structured introduction of concepts . High interest level . Provision of prerequisite skills and knowledge	Readiness materials that teach skills required to use text	Geared to motivational characteristics and ability level of students
. Multisensory	Audiotapes, charts, visuals, work sheets	Permits alternative learning strategies and styles
. Provides for student evaluation and feedback	. Prescriptive tests . Tests of student competencies . Tests of learning objectives . Student feedback and self-assessment	. To determine areas of need and placement in instructional sequence . State and local curriculum mandates . Evaluation for teacher planning of instruction . Reinforces student learning, self-correction

Upon completion of the student assessment and an analysis of the textbook strengths and weaknesses, it is possible to identify strategies for adaptation that will result in supplementary supportive materials. Simple strategies to address specific learning needs include:

Area to Be Addressed	Strategy
Vocabulary Development	Modify vocabulary . Rewrite directions on workbook . Provide vocabulary list with synonyms or simplified definitions
Reading Comprehension	Tape record materials . Record directions for learner reference . Record passage; learner follows written text
Concept Development	Develop materials that utilize different modalities . Reinforce text with visual supplements such as illustrations, pictures . Develop readiness materials that teach prerequisite skills that are necessary for conceptual understanding
Listening Skills	Increase repetition . Develop audiocassettes that present information in the text; assign student to repeat selected selections using cassette. . Develop checklist of information being presented from text; student checks items as he/she hears them during oral presentation

TYPES OF TEXTBOOK ADAPTATION MATERIALS

Audiocassettes

An audiocassette can incorporate a variety of learning modalities—auditory, visual and kinesthestic—to present and reinforce ideas, concepts and important facts. Audiocassettes provide an opportunity for the developer to simplify concepts and language and to increase student motivation attention and listening skills.

Audiocassettes that highlight or summarize the content of the textbook can provide prereading anticipation, review of material after reading, and reinforcement of the main ideas. They need not be used as a substitute for reading but rather as a reinforcement to it. Scripts can be prepared to accompany any student listening. Audiocassettes in social studies, for example, can present main ideas of a textbook chapter using simple language enhanced by sound effects, music, dramatization and effective narration. Students can be asked to recall what they heard, to extend ideas with discussions about an historical event.

Student activity worksheets can also be developed to accompany the cassettes and to extend, review and support them. These worksheets might focus on identifying main events, important people or important concepts.

Vocabulary audiocassettes are an effective approach to student reading of written vocabulary definitions and they can be helpful in reviewing definitions.

A procedure that can be used in preparing a cassette is:

- Each definition is read word-for-word from the written sheet
- Each word or phase is used in context in a sentence
- Students say the word aloud with the narrator
- Students find the word at the bottom of the definition worksheet and circle it

Each segment should be brief and not more than 10 minutes so that student attention remains focused. Brief musical interludes can be used to separate various segments.

Students who have difficulty grasping the written definitions can use the cassette prior to class reading tasks and students can use them as an aid while working on the worksheets. For a student who has excellent oral vocabulary and listening skills and limited reading abilities, this cassette is an excellent way of employing student strengths to develop weaker areas.

Computer Software

The microcomputer is a phenomenon that is rapidly growing around the nation and shows great promise as a support for efforts to individualize and adapt instruction and as a strategy to assist teachers overburdened with demands on their time. It enables the teacher to establish for the student a close and immediate link between instruction, assessment, feedback, correction, and/or reinforcement. It requires students to be

active participants in interacting with the computer, and it is "programmed" for success, thus, increasing the students' sense of competence through mastery of new skills in a failure-free, nonthreatening environment.

However, in using the microcomputer as an instructional supplement for mildly handicapped learners, it is vitally important that software for these machines be designed with the learners' needs as a basis and their limitations as a constraint. The chart on the next page presents learner characteristics and instructional adaptations that relate to computer software capabilities. The key to successful use of this resource is understanding the characteristics of mildly handicapped learners and using content material that captures their imagination and their interest.

Microcomputer software can be developed in different content areas to support and supplement the basic textbook. It provides an alternative and stimulating learning modality to traditional print instruction, and it can perform many functions to enhance curriculum and instruction. As a patient teacher it provides students with stress-free "drill and practice." As a responsive instruction the microcomputer has interactive capabilities that are important in providing "tutorial" learning experiences. Concept building activities can be presented as well as development of thinking skills, or reinforcement of reading skills.

Databases can be created in different subject/content areas and when combined with a data base manager and pedagogical activities, they offer powerful supplementary learning supports. Data bases in american and world history for example, can help students learn facts, understand relationships, and develope concepts.

Software can also be developed that simulates situations presented in textbooks. Simulation is an educational strategy that has been used in a variety of ways to reinforce learning. Role-playing, for example, has effectively been used in history classes to enable students to better understand historical characters and their reasons for making certain decisions that have had important consequences. Computer software can be developed that simulates the presidential campaign process, or that reinforces learning about the planetary sciences by simulating the process of commanding a space ship.

Computerized instructional management systems can also be developed to accompany a textbook. They can record, compute, and print reports of student performance. The teacher with mainstreamed mildly handicapped students can monitor student performance carefully and systematically. Documentation of student work can then be made available for parents and other professionals. These management systems are effective in evaluating student progress and meeting IEP requirements. Objectives can be prepared that are correlated to the textbook and software can be developed to chart student progress in meeting the objectives.

Print Supplements

Mainstreamed mildly handicapped students can profit from adaptive materials that present concepts on more palatable increments, use vocabulary that communicate concepts more simply, lower the reading level of the basic text, address reading comprehension and language skills and focus on developing listening and attending skills.

These printed materials can be designed as student activity and study sheets that strengthen material presented in the textbook through use of creative repetition. The

placement of a black border around student materials is an effective technique for limiting the visual field and helping learners concentrate and focus on the printed page.

Some students are overwhelmed when they open a textbook, especially if they have reading problems or problems related to their self-concept. Sometime, fear is paralyzing and self-defeating. Professional literature in the teaching of reading cites the use of an "advance organizer" that can held ready the mental set to receive new information.

Previews of chapters of the textbook can be prepared as an "advance organizer" and summaries can serve as a review to the text. They should be written at a reading level below that of the textbook to provide those students who struggle with reading activities with a supplement that is easier to handle. The previews help to create pre-reading anticipation and the summaries serve as a review aid. These resources can help students who find preparing for a quiz especially difficult since they can focus on major points in each chapter. They also can be used as a stimulus for class discussion or for directed student reading assignments.

Other student activity worksheets can be prepared that focus on specific skill development and that are at a level of difficulty appropriate for mildly handicapped students. These worksheets can be created to closely follow formats used in the textbook but they can be simplified by lowering the vocabulary presenting smaller amounts of material, and by repeating and reviewing the skills to be learned.

Print supplements can also be designed to assist teachers in developing strategies to use the basic textbook in a classroom that includes a wide range of activities. Information should be included on the learning characteristics and needs of mildly handicapped students. Alternative strategies to managing the ability-integrated classroom and suggestions for creative supplemental activities are also helpful to the teacher coping with an ability-integrated classroom.

For each chapter in the textbook key vocabulary can be identified. Primary and enabling objectives can be written for each section within each chapter of the textbook. Teachers can use these objectives to develop activities and to evaluate student performance.

Other Media

A new phenomenon is the emergence of interactive video. Interactive video integrates the computer's logic with the realistic presentation of the sound, color and motion of video. It creates and individualized interactive learning system that allows for flexibility of input (keyboard or touch pad) and collects, analyzes, and reports results immediately. Interactive video simulation enables individuals to have realistic experiences that might otherwise be impossible due to physical limitations, instructional costs, or danger. It can be used to enhance and extend basic textbook instruction in a variety of content areas.

Filmstrips are another excellent supplemental material that offers a visual stimulus for students. When combined with sound, they are especially effective for students whose learning styles are auditory and who struggle with the printed page. The use of filmstrips for educational purposes is as widespread as the green chalkboard and as well accepted in the classroom as any piece of equipment can be.

COMPUTER SOFTWARE CAPABILITIES

Learner Characteristics	Instructional Adaptations	Computer Software Capabilities
Distracted by unimportant information	Add structure and focus	Magnified print, underlining, color coding, other highlighting features such as visual and sound displays; add directions
Respond either very quickly or very slowly to verbal or written questions	Delete extraneous information; lower or modify pace or vocabulary	Include extra demonstrations, examples, and practice; program computer to allow extra responding time; prompts, like a flashing light for hurry up or a stop sign to slow down before responding, can be built in
Have difficulty recalling either visual or auditory information	Provide overviews and summaries, include repetition and guided practice (modeling)	Insert boxes with key generalizations at beginning of instructional segments; allow correct answers to be chosen from a list of provided options rather than asking for open-ended student responses; further sequence and branch instruction at several levels of difficulty
Have difficulty taking what is learned in one context and applying it to new situations (generalization/transfer skills)	Introduce more comparisons; likeness/difference activities using examples from prior learning and predictions for future applications	Add a variety of concrete, real life examples; include questions asking students how the information might be used in the future; carefully match instructions with activities and evaluation
May be unaware of when they are making mistakes	Match reinstruction to error analysis of trends/typical mistakes of students	Program immediate feedback and reinforcement statements, both positive and negative; program a capability to analyze work patterns to determine where a student needs extra practice or instruction; add scoring and self-correcting components for student self-checks